CLAIMS

1. A martensitic stainless steel comprising C: 0.01 - 0.10%, Si: 0.05 - 1.0%, Mn: 0.05 - 1.5%, P: not more than 0.03%, S: not more than 0.01%, Cr: 9 - 15%, Ni: 0.1 - 4.5%, Al: not more than 0.05% and N: not more than 0.1% in mass %, and further comprising at least one of Cu: 0.05 - 5% and Mo: 0.05 - 5%, the residual being Fe and impurities, wherein the contents of Cu and Mo satisfy the following formula (a),

$$0.2\% \le \text{Mo} + \text{Cu}/4 \le 5\%$$
 ... (a)

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and wherein the hardness is 30 - 45 in HRC and the amount of carbides in grain boundaries of the prior austenite is not more than 0.5 volume %.

2. A martensitic stainless steel comprising C: 0.01 - 0.10%, Si: 0.05 - 1.0%, Mn: 0.05 - 1.5%, P: not more than 0.03%, S: not more than 0.01%, Cr: 9 - 15%, Ni: 0.1 - 4.5%, Al: not more than 0.05% and N: not more than 0.1% in mass %, and further comprising at least one of Cu: 0.05 - 5% and Mo: 0.05 - 5%, the residual being Fe and impurities, wherein the contents of Cu and Mo satisfy the following formula (b),

$$0.55\% \le Mo + Cu/4 \le 5\%$$
 ... (b)

and wherein the hardness is 30 - 45 in HRC and the amount of carbides in grain boundaries of the prior austenite is not more than 0.5 volume %.

3. A martensitic stainless steel comprising C: 0.01 – 0.10%, Si: 0.05 –1.0%, Mn: 0.05 – 1.5%, P: not more than 0.03%, S: not more than 0.01%, Cr: 9 – 15%, Ni: 0.1 – 4.5%, Al: not more than 0.05% and N: not more than 0.1% in mass %, and further comprising at least one of Cu: 0.05 – 5% and Mo: 0.05 – 5%, and further comprising one or more elements of Ti: 0.005 – 0.5%, V: 0.005 – 0.5% and Nb: 0.005 – 0.5%, the residual being Fe and impurities, wherein the contents of Cu and Mo satisfy the following formula (a),

$$0.2\% \le Mo + Cu/4 \le 5\%$$
 ... (a)

and wherein the hardness is 30 - 45 in HRC and the amount of carbides in grain boundaries of the prior austenite is not more than 0.5 volume %.

4. A martensitic stainless steel comprising C: 0.01 - 0.10%, Si: 0.05 - 1.0%, Mn:

0.05 - 1.5%, P: not more than 0.03%, S: not more than 0.01%, Cr: 9 - 15%, Ni: 0.1 - 4.5%, Al: not more than 0.05% and N: not more than 0.1% in mass %, and further comprising at least one of Cu: 0.05 - 5% and Mo: 0.05 - 5%, and further comprising one or more elements of Ti: 0.005 - 0.5%, V: 0.005 - 0.5% and Nb: 0.005 - 0.5%, the residual being Fe and impurities, wherein the contents of Cu and Mo satisfy the following formula (b),

$$0.55\% \le Mo + Cu/4 \le 5\%$$
 (b)

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and wherein the hardness is 30 - 45 in HRC and the amount of carbides in grain boundaries of the prior austenite is not more than 0.5 volume %.

- 5. A martensitic stainless steel according to Claim 1, wherein said steel further comprises one or more elements of B: 0.0002 0.005%, Ca: 0.0003 0.005%, Mg: 0.0003 0.005% and rare earth elements: 0.0003 0.005% in mass %.
 - 6. A martensitic stainless steel according to Claim 2, wherein said steel further comprises one or more of B: 0.0002 0.005%, Ca: 0.0003 0.005%, Mg: 0.0003 0.005% and rare earth elements: 0.0003 0.005% in mass %.
 - 7. A martensitic stainless steel according to Claim 3, wherein said steel further comprises one or more elements of B: 0.0002 0.005%, Ca: 0.0003 0.005%, Mg: 0.0003 0.005% and rare earth elements: 0.0003 0.005% in mass %.
- 8. A martensitic stainless steel according to Claim 4, wherein said steel further comprises one or more elements of B: 0.0002 0.005%, Ca: 0.0003 0.005%, Mg: 0.0003 0.005% and rare earth elements: 0.0003 0.005% in mass %.